Overview

In this introductory module to the *Brain Power! Challenge* Program, your child will learn about the parts of the brain and their functions, and about neurotransmission, which is the process through which information moves from one brain cell to another. This information will serve as a foundation for the other five modules in the program.

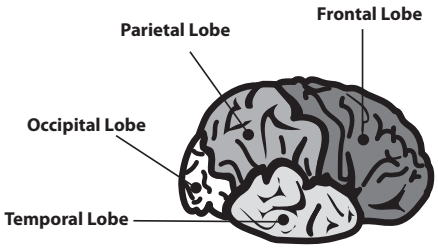
The activities your child will be completing during the six modules of the *Brain Power! Challenge* Program align with the National Science Education Standards. These standards stress such issues as the functioning of the body, the impact of drug abuse on individuals and society, and the need for people to make good decisions about their health.

The purpose of this newsletter is to provide you with information so that you can reinforce at home what your child has been learning in school. You will receive one newsletter for each of the six modules in the program. You can turn to the newsletter for information on drugs and their effects and for hints on how to discuss these topics with your child.

Summary

Parts of the Brain

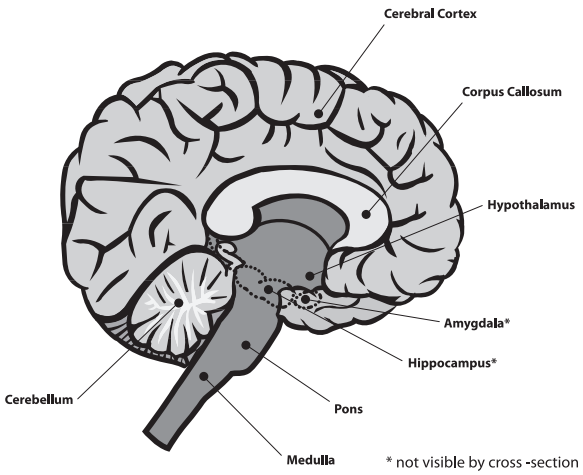
The charts below summarize the key information your child will be learning in this module.



View from side of head

Brain Part	Function
Frontal Lobe	Responsible for coordination of motor movements and problem solving.
Parietal Lobe	Processes sensory information, such as pain, touch, and pressure.
Occipital Lobe	Processes visual information.
Temporal Lobe	Processes auditory and sensory information.

Brain Part	Function
Cerebral cortex	Responsible for thinking and reasoning. Has a right and left hemisphere and various lobes, all of which perform specific tasks.
Hypothalamus	Produces hormones released by the pituitary gland. Controls body temperature, hunger, and thirst.
Cerebellum	Controls movement and balance.
Brain stem (Pons and Medulla)	Responsible for basic life functions: controls heart rate, respiration, and reflexes.
Limbic system (Hippocampus and Amygdala)	Involved in learning, memory, and emotions; impacted by illegal drugs.

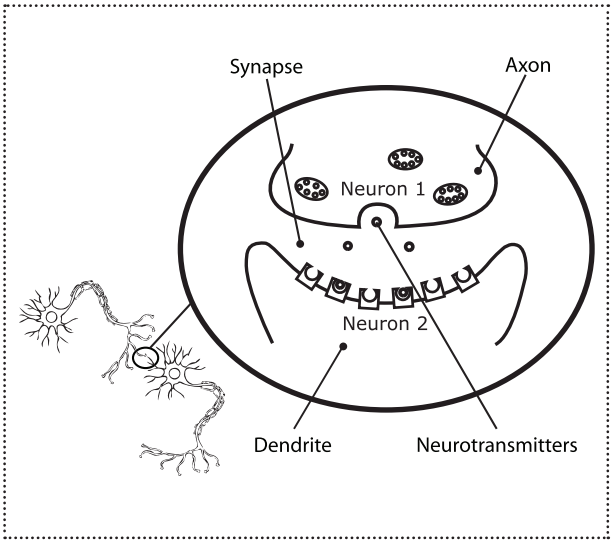


Cross-section of brain

Summary

Neurotransmission

Your child will also be learning how information travels in the brain. The movement of information from one brain cell, or neuron, to another is accomplished through neurotransmission. Neurotransmission takes place through the release of chemicals into the space between the neurons. These chemicals are called neurotransmitters. The spaces between the neurons are called synapses. When the neurons communicate, an electrical impulse causes neurotransmitters to be released from one neuron into the synapse. The neurotransmitters then cross the synapse to bind with specific receptors on the other neuron. Receptors are special molecules that receive neurotransmitters which cause changes in the neurons.



Science at Home

Talk with your child about what an important organ the brain is. During everyday conversations, try to think about what part of the brain is working. Also, point out things that you might be doing to keep your brain safe and healthy—such as getting enough sleep or wearing a helmet while bike riding. Even wearing a seat belt in the car can help the brain in case of an accident!

Many newspaper articles and television shows feature new information that scientists are learning about the brain. In future modules of the *Brain Power!* curriculum, your child will learn more about how scientists study the brain and how this information can be used to help people live longer, safer lives. Talk about the brain whenever an opportunity presents itself, and share in the exciting scientific knowledge!

Resources

National Institute on Drug Abuse (NIDA)
www.drugabuse.gov, 301-443-1124
This Web site contains information about drug abuse as well as sections designed specifically for parents, teachers, and students.

National Clearinghouse for Alcohol and Drug Information (NCADI)
http://ncadi.samhsa.gov, 1-800-729-6686
NCADI is the world's largest resource for information and materials concerning substance abuse. Many free publications are available here.